

Notice of Allowability

Application No.

09/990,102

Examiner

Louise N. Leary

Applicant(s)

AKESON ET AL.

Art Unit

1654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 3-24-2004.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 3-28-2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

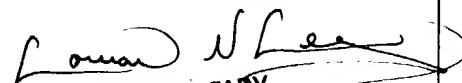
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


LOUISE N. LEARY
PRIMARY EXAMINER

1. The following is an examiner's statement of reasons for allowance:

The reasons for allowance of the claims is that none of the prior art of record disclose or suggest (I) a method of characterizing an unlabeled duplex nucleic acid (NA) molecule comprising the steps of (a) contacting a conducting fluid medium comprising the unlabeled duplex NA with a nanopore, (b) applying an electric field to the medium and monitoring the current changes to obtain a set of observed data values, (c) evaluating the set of observed data values to identify a duplex nucleic acid specific signal, and (d) characterizing the unlabeled duplex NA molecule based on the identified NA specific signal; (II) a method of identifying the presence of an unlabeled duplex NA molecule in a conducting fluid medium comprising the steps of (a) contacting the conducting fluid medium with a nanopore, (b) applying an electric field to the medium, (c) monitoring the current changes to obtain a set of observed data values, (d) evaluating the set of observed data values to identify a duplex nucleic acid specific signal, and (e) determining whether the unlabeled duplex NA is present in the conducting fluid medium from the duplex NA specific signal identified in step (d); (III) a method for determining the sequence of a duplex DNA molecule comprising the steps of (a) providing a fluid conducting medium comprising the duplex DNA molecule as a molecule protected at one end and blunt-ended at the other end, (b) producing a single nucleotide overhang at the blunt end of the DNA molecule, (c) contacting the fluid with a nanopore, (d) applying an alternating electric current and monitoring current changes, (e) removing the single nucleotide overhang, (f) repeating steps (b) to (e) and (g)

determining the sequence of the duplex DNA molecule from the collection of sets of observed data values to sequence the duplex DNA molecule; (IV) a nanopore device for characterizing an unlabeled duplex NA molecule comprising an algorithm for characterizing an unlabeled duplex NA molecule based on evaluating observed current modulations through nanopore to identify a duplex NA specific signal, wherein the algorithm is present on a computer readable medium; (V) a kit for use in characterizing an unlabeled duplex NA molecule based on evaluating observed current modulations through a nanopore to identify a duplex NA specific signal, wherein the algorithm is present on a computer readable medium; nor (VII) a kit for use in sequencing a duplex DNA molecule comprising a first enzyme that produces a single nucleotide overhang containing duplex DNA molecule that comprises a single nucleotide overhang as claimed in the present invention.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louise N. Leary whose telephone number is (571) 272-0966. The examiner can normally be reached on Monday to Friday from 10 to 6:30pm.

Art Unit: 1654

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback, can be reached on (571) 272-0961. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LOUISE N. LEARY
PRIMARY EXAMINER

May 13, 2004